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advantageous embodiments of the switching system according to the invention.

According to the invention, a combined switching and
5 blocking apparatus is provided in the switching system,
with a blocking element having at least one blocking
rod for each fused switch unit being mounted on an
operating lever of the switch for closing and
10 interrupting the circuit. Furthermore, an interlocking
element having an opening is provided in each fused
switch unit and is arranged in the fused switch unit
such that it can always be switched to and fro together
with the fuse link. Each blocking rod can be inserted
15 into the opening in the associated interlocking element
only when the associated fuse link is in its switched-
on position; and the operating lever of the switch can
be switched to close the circuit only when each of the
blocking rods can be inserted into the opening in its
20 associated interlocking element. A fuse link cannot be
moved to the switched-off position when the associated
blocking rod is inserted in the opening in the
associated interlocking element. This is the case for
all the fuse links whenever the operating lever of the
switch is switched to close the circuit.

25 The refinement according to the invention of the
combined switching and blocking apparatus automatically
ensures that the circuit of the switching system cannot
be closed unless all the fuse links in the fused switch
30 units are in their switched-on position. At the same
time, this ensures that, once the circuit has been
closed by switching the operating lever of the switch,
and hence of the combined switching and blocking
apparatus, none of the fuse links can be switched from
35 its switched-on position to the switched-off position.

Incorrect operations are thus one hundred percent
precluded, with operation of the system being extremely

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simple by virtue of there being only one operating lever.

5 The switching system according to the invention may comprise just one fused switch unit. However, it preferably comprises a number of series-connected fused switch units.

10 The switching and blocking apparatus according to the invention is particularly applicable to switching systems having a number of fused switch units for a three-phase circuit. The fused switch units can in this case be mounted, in particular, on busbars.

15 The individual fused switch units may have different structural designs. For example, in one embodiment, the fuse link can be switched to and fro directly between the switched-on position and the switched-off position in the fused switch unit. In other embodiments, a fuse
20 plug is provided for holding the fuse link, in which the fuse plug can either be switched to and fro directly between a switched-on position and a switched-off position or can be inserted into a switching rocker of a fused switch unit, which is in turn designed such
25 that it can be switched to and fro.

The interlocking element can be mounted directly on the fuse link, but is preferably mounted on the fuse plug or on a switching rocker, so that standardized fuse
30 links can be used without the interlocking element having to be manually released from the old fuse link and having to be mounted on the new one, when replacing the fuse link, or, in some circumstances, having to adopt complex measures to ensure that the fuse link is
35 automatically connected to the interlocking element on replacement.

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If there is a switching rocker, then the interlocking element is preferably integral with the switching rocker, in order to achieve a simple system design.

- 5 The interlocking element is preferably in the form of a guide element, which defines and monitors the switching movement of the fuse link and/or of the fuse plug or of the switching rocker, in order to ensure a uniform and exact switching process.

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The interlocking element preferably has at least one latching apparatus, which engages with corresponding latching elements in the fused switch unit, when the fuse link is in the switched-off position and/or the
15 switched-on position. The limit positions of the fuse link and/or of the fuse plug or of the switching rocker are thus fixed as defined, latched limit positions.

- 20 These and further advantages of the invention are evident from the attached schematic drawings, in which:

Figure 1 shows a cross-sectional view through an area element of one embodiment of the switching system according to the invention, with a
25 fuse link in the switched-off position;

Figure 2 shows the embodiment of the switching system illustrated in Figure 1, with the fuse link in the switched-on position; and

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Figure 3 shows a cross-sectional view along the line A-A in Figure 1.

35 Figure 1 shows an area element of one embodiment of the switching system according to the invention, which comprises a number of fused switch units 10. However, for simplicity, only one area element of a single fused switch unit is shown. The other fused switch units are constructed analogously.

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The fused switch unit 10 has a fuse plug 40, into which a fuse link 20 is inserted. A lower contact 50 makes contact with the fuse link 20 irrespective of the position of the fuse plug 40, while an upper contact 60 does not make contact with the fuse link 20 when the fuse plug 40 is in the switched-off position shown in Figure 1.

10 The lower contact 50 of the fused switch unit 10 is preloaded by means of a spring 51, thus making a sliding contact 52, in the form of a fork, with the fuse link 20 at all times. The upper contact 60 makes contact with a mating contact on the fuse link 20 only
15 when the fuse plug 40 is pivoted (see Figure 2).

An interlocking element 35, which is in the form of a segment of a circle, is fitted to the fuse plug 40, is at the same time in the form of a guide and supporting
20 element, and is guided in a guide rail (not shown) on the housing 11 of the fused switch unit 10.

The fuse plug 40 can be inserted into the fused switch unit 10 and can be removed from it, while the
25 interlocking element 35 is a fixed component of the fused switch unit 10. The connection between the two elements will be explained in the following text in conjunction with Figure 3.

30 The interlocking element 35 has an opening 36 into which a blocking rod 33 of the blocking element 32 of the switching and blocking apparatus 30 can be inserted when the fuse plug is in its switched-on position. However, when the fuse link 20 and the fuse plug 40 are
35 in the switched-off position shown in Figure 1, the blocking rod 33 of the switching and blocking apparatus 30 abuts against an edge area of the interlocking element 35, so that the operating lever 31 of the switching and blocking apparatus 30 cannot be switched.


The blocking rod 33 is part of the blocking element 32, with the blocking element having further blocking rods (not shown), which branch out, for further fused switch units. The blocking element is produced from a rigid material, thus avoiding distortion of the blocking element.

A latching element 37 of the interlocking element 35 engages with a corresponding latching element 38 on the fused switch unit 10, so that the switched-off position shown in Figure 1 represents a latched limit position of the fuse plug 40 together with the fuse link 20.

In Figure 2, the fuse plug 40 together with the fuse link 20 is in its switched-on position. The fuse link 20 is now in contact with both the lower contact 50 and the upper contact 60 of the fused switch unit 10.

When the fuse plug 40 is pivoted to the switched-on position, the position of the interlocking element 35 also changes. The opening 36 in the interlocking element 35 is aligned with the blocking rod 33 of the switching and blocking apparatus 30, so that the operating lever 31 can be moved to a switched-on position, as a result of which the circuit of the switching system is closed. The pivoting of the operating lever 31 at the same time results in the blocking rod 33 being inserted into the opening 36 in the interlocking element. The dimensions of the blocking rod 33 correspond to those of the opening 36 in the interlocking element 35, so that the insertion process takes place with an accurate fit, and the fuse plug 40 together with the fuse link 20 cannot be pivoted out of the switched-on position.

The latching element 37 of the interlocking element 35 engages with a second latching element 39 on the fused switch unit so that this ensures that the fuse plug 40



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has a latched limit position, irrespective of the position of the operating lever 31 and of the blocking of the fuse plug 40 by the blocking rod 33 in the switched-on position.

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Since the blocking element 32 together with in each case one blocking rod 33 for each fused switch unit 10 is a rigid element, the operating lever cannot be moved to the position shown in Figure 2 if even only one of
10 the fuse plugs 40 is not in its switched-on position.

Figure 3 shows a cross section through the fuse plug 40 and the interlocking element 35 along the line A-A in Figure 1. The fuse plug 40 has an attachment element 41
15 in the form of a dovetail, which engages in a corresponding mating element 42 on the interlocking element 35, thus producing a positively locking connection, with a friction fit. The fuse plug 40 can thus easily be inserted from above into the fused
20 switch unit 10, with a reliable connection between the fuse plug 40 and the interlocking element 35 automatically being ensured via the attachment element 41 and the mating element 42.

25 It shall be mentioned once again that the illustrated drawings are only schematic, so that no restrictions with regard to the dimensions and size ratios of the illustrated elements can be derived from them. Other geometric embodiments of the illustrated elements may
30 be used without departing from the subject matter of the present invention.

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List of reference symbols

- 10 Fused switch unit
- 11 Housing
- 20 Fuse link
- 30 Switching and blocking apparatus
- 31 Operating lever (switching and blocking apparatus)
- 32 Blocking element
- 33 Blocking rod
- 35 Interlocking element
- 36 Opening (interlocking element)
- 37 Latching element (interlocking element)
- 38,39 Latching elements (fused switch unit)
- 40 Fuse plug
- 41 Attachment element (fuse plug)
- 42 Mating element (interlocking element)
- 50 Lower contact (fused switch unit)
- 51 Spring (lower contact)
- 52 Upper contact (fused switch unit)